

"Treatise on Medical Geography," to apply to them the term *Keraunography* (to write with thunder). Mr. Poey, in 1861, published a small volume in which twenty-four illustrative cases are cited. The author starts with the popular notion that the dendritic figures referred to are derived from some near or distant tree, and then proceeds to account for them by means of a photo-electric action in which the surface of the animal is the sensitive plate; the tree, &c., the object; and the lightning the force that impresses it.

But in connection with our subject are other facts, startling, it is true, but recurring from time to time in different parts of the world, and reported by sailors and others, who possess the invaluable art of recording their observations without attempting to explain them. The desire of explaining everything often amounts to a kind of rabies, when the sane course seems to be to wait; for if a reasonable theory is impossible, an unreasonable one is ridiculous. Nevertheless, some observers, if they cannot explain a fact, deny its truth; and yet such facts may exist in nature, and only wait the progress of discovery, when in due time they are gathered in under the sickle of the appointed reaper. Three such facts are the following:—

1. In September 1825, the brig *Il Buon Servo*, anchored in the Bay of Armiro, was struck by lightning, and a sailor who was sitting at the foot of the mizenmast was killed. Marks were found on his back, extending from the neck to the loins, including the impression of a horse-shoe, perfectly distinct, and of the same size as the one that was fixed to the mast.

2. In another case that occurred at Zante, the number 44 in metal was attached to the fixed rigging between the mast and the cot of one of the sailors. The mast was struck and the sailor killed. On his left breast was found the number 44, well formed and perfectly identical with that on the rigging. The sailors agreed that the number did not exist on the body before the man was struck.

3. M. José Maria Dau, of Havannah, states that in 1828, in the province of Candelaria, in the island of Cuba, a young man was struck by lightning, and on his neck was found the image "d'un fer à cheval qui avait été cloué à peu de distance contre une fenêtre."

Unexpected light was thrown upon such cases by Mr. C. F. Varley (Proc. Roy. Soc., Jan. 12, 1871), in following up an accidental observation during the working of a Holtz electrical machine, the poles of which were furnished with brass balls about an inch in diameter. Noticing some specks on the ball of the positive pole, Mr. Varley tried to wipe them off with a silk handkerchief, but in vain. He then examined the negative pole, and discovered a minute speck corresponding to the spots on the positive pole. This pole sometimes exhibits a glow, and if in this state three or four bits of wax, or even a drop or two of water, be placed on the negative pole, corresponding non-luminous spots appear on the positive pole. Hence it is evident that lines of force exist between the two poles, by means of which we may telegraph through the air from the negative to the positive pole. And in explanation of the above cases in which the lightning-burn on the skin is of the same shape as the object from which the discharge proceeded, all that is necessary is that the object struck be + to the horse-shoe, brass number, &c., the discharge being a negative one.

C. TOMLINSON

INAUGURATION OF THE ZOOLOGICAL STATION OF NAPLES

AFTER the first working year a formal inauguration of this new institution took place on April 11. Dr. Dohrn had invited the Italian Minister of Public Instruction, Signor Borghi, and the German Ambassador at Rome, Herr von Kendell, to be present as representatives of

the two countries which had most assisted in completing the new establishment, the one granting the locality, whilst the other paid a subvention of 3,000% towards the expenses of the construction. Unfortunately both gentlemen were at the last moment prevented from being present, but sent two letters stating their great sympathy and the sympathy of the two Governments which they represent, for the Zoological Station.

The inauguration solemnity consisted chiefly in an inaugural address read by Dr. Dohrn himself to an audience of distinguished gentlemen, and a short answer given by Signor Paureri, the well-known Professor of Anatomy of the Naples University.

Before giving an abstract of the address, it may be permitted to say a few words about the life and work of the Zoological Station during the first year of its existence.

The following naturalists have made use of its laboratories:—From *England*: Mr. Balfour, Mr. Dew Smith, Mr. Marshall, from Cambridge; Mr. E. Ray Lankester, from Oxford. From *Holland*: Mr. Hubrecht (Leyden), Dr. Hoek (Haag), Prof. Hoffmann (Uyden), Dr. Hoorst (Utrecht), Prof. Van Ankum (Groningen). From *Germany*: Prof. Waldeyer (Strassburg), Prof. Wilh. Müller (Jena), Dr. Korsmann (Heidelberg), Prof. Hessler (Constance), Prof. Greeff (Marburg), Profs. Kollmann and Ranke (Munich), Dr. Steiner (Halle), Prof. Oscar Schmidt (Strassburg), Prof. Langer (Freiburg), Dr. v. Thering (Göttingen), Dr. Götte and Dr. Lorent (Strassburg), Dr. Vetter (Dresden), Prof. Selenka (Erlangen). From *Austria*: Prof. Claus (Vienna) with two students of the Vienna University. From *Russia*: Prof. Salensky (Kazan), Dr. Rajewsky (Moscow), Dr. Bobretzky (Kiew), Dr. Ulianin (Moskau), Dr. Rosenberg (Dorpat), Cand. Isnoskoff (Kazan). From *Italy*: Dr. Cavanna (Florence), Dr. Fanzago (Padua), Dr. Zingone (Naples).

Some of these naturalists have been working a whole year in the Zoological Station; some have come back a second time; the greater number have only stayed the winter, especially from February till May, a period when the Station is likely to be visited more frequently than at any other.

If one compares the number of naturalists coming to Naples in former years to study Marine Zoology with the number of those who are named above, it is at once obvious how great an effect the Zoological Station has had on the increase. Formerly from three to five zoologists used to come during the year to Naples, often even less, or none. From Easter 1874 till Easter 1875, there were thirty-six naturalists, and during March and April of this year alone there have been working contemporaneously in the Zoological Station eighteen zoologists.

This shows how considerable in a quantitative point of view the increase of scientific work done at Naples has become. It is besides obvious that the arrangements in the Zoological Station—the great Aquarium providing almost natural conditions of life to the animals, the daily supply of fresh material, the facility offered by the library for consulting the literature, and the personal intercourse among so many scientific men,—must have also a favourable influence on the quality of the work, by enabling each of the naturalists to concentrate his energy solely on the scientific difficulties of his pursuit, not having at all to deal with any of the tiresome, very trying, and for a single man often almost insurmountable obstacles of a more practical character which are in the way of these studies.

Besides, one must not forget that the Zoological Station is still in its infancy, and has grown to its present state of working order in the midst of difficulties of every kind and character. Granted a greater experience in the line of its actions, especially a greater knowledge of the sea and its localities, currents, temperatures, and other conditions affecting the life and habitat of

the animals; granted, further, an increased income to allow a more liberal endowment of its different parts, viz., library, collection, laboratories, and also an increase in its leading and scientific staff; granted, finally, new donations and subventions like those of the English naturalists and of the German Government, and we may be pretty sure that the Zoological Station at Naples will in future be a quite indispensable and very powerful instrument for scientific research.

At present the following Governments and Universities have entered upon contracts with the Zoological Station for one or two tables:—Prussia, Italy, Russia, Austria, each for two tables; Bavaria, Saxony, Baden, Mecklenburg, Holland, and the Universities of Cambridge and Strassburg, each for one table. Negotiations have been entered upon with Württemberg and Hesse-Darmstadt. Accommodation for twenty-four naturalists will be ready for next winter, and it is hoped to augment the daily arriving quantity of marine animals for investigation by help of a small steam launch, which will be always out on fishing expeditions, weather permitting.

All this together shows a regularly working institution, which, we believe, deserves the full attention of scientific men as a new element, or, to use an expression applied to it once by Prof. Owen, a new dynamic in science.

The following is an abstract of Dr. Dohrn's inaugural address:—

Dr. Dohrn began by referring to the success which has hitherto attended the Naples establishment, to the Andersonian School of Natural History in America, and to the Zoological Station which the Austrian Government proposes to establish at Trieste. He then proceeded to show what may in time be expected from the institution; in what its duties principally consist.

The original purposes of the undertaking was to facilitate the labours of the zoologists who come to Naples from all parts of Europe to study the marine animals of the Bay. For this purpose it is of course necessary to enter into relations with the fishermen in the Bay, in order to obtain the needed supply of fish; but this method is so far from satisfactory that Dr. Dohrn, as soon as the state of funds permits, is resolved to obtain a small steamer, properly fitted up; with such assistance only can the purposes of the institution be satisfactorily carried out.

Dr. Dohrn then referred to the library of the Station, which he is exceedingly anxious to make as complete as possible, and hopes that authors, publishers, and academies will continue to supply the wants of the Station in this respect. He is especially anxious to obtain systematic works, the want of which has already made itself painfully felt. The institution greatly depends upon its pecuniary resources, and he hopes those who are friendly to its purpose will continue to lend it a helping hand.

The Zoological Station will continue to supply foreign universities, laboratories, museums, and private collections with marine animals, carefully preserved according to the directions of the person who orders them.

Besides thus endeavouring to further the work of others, the Station has important scientific tasks of its own. One of the chief of these is an exact determination of the fauna of the Bay. Not only for its own sake is this task one of the first duties of the Station, but it will be of great assistance in facilitating the work of the Station in other directions. It may be objected that the smallness of the means at the disposal of the Station is inadequate to the fulfilment of all these purposes. While the justice of this objection is admitted, there is at the same time no doubt that a great future is in store for Zoological Stations; for the principle on which they are founded will remain, and give rise to ever new realisations.

The decreasing importance which the study of zoology holds in the medical curriculum can hardly be avoided without inordinately lengthening the time required for

such a course, medical science itself has become so subdivided and specialised. Still, those who look upon the medical profession as something more than merely a means of livelihood, will not treat zoology with indifference, but will perceive the important bearing it has on the proper understanding of many medical problems.

The importance of the principles of the Development theory on the progress of medicine are then insisted on. In the case of transmission of a hereditary tendency to certain forms of disease, the application of these principles might be made to serve a most important purpose, if thoroughly understood and carefully carried into practice. "How important must it be to ascertain the conditions of such a transmission, to discover the symptoms which, though in the present state of our knowledge they may escape observation, may in the earliest years show a morbid predisposition, and thus warn us to conduct the whole physical and moral education of the child with reference to the hidden enemy. . . . As soon as these truths have become a part of the intellectual possessions of the people, as soon as physicians and teachers bear them constantly in mind and act in accordance with them, how different will education become! For in this the highest significance of the Darwinian theory consists, that its principles embrace the moral as well as the physical nature of man, and that their critical application may bring about intellectual as well as corporal changes.

"As soon as its high practical value is established and recognised, no doubt can be entertained that the progress of zoology, the chief exponent of these laws, is an essential furtherance to the advance of morals and the reasonable adjustment of human life; and it follows that society—and the highest form of society, the State—are not only entitled, but in duty bound, to afford a free opportunity for zoological investigation, and to support it by all the means in their power."

Zoology is now so advanced and subdivided that at the various universities the professorships of Zoology should be at least doubled; no man is able adequately to teach all branches of it. Moreover, laboratories must be established at the seaside, and still more, stations in various parts of the world.

Dr. Dohrn bespoke the utmost toleration for the Darwinian theory from all classes. He hoped that the fact that he had connected the name of the Station with the development and application of the Darwinian theory would not prevent anyone from lending it his support.

"When the fundamental principles of Darwinism are once thoroughly understood, it becomes clear that it is not nearly as revolutionary as some of its disciples seem to suppose. On the contrary, it is the declared enemy of all revolutions. It takes its stand on concrete reality, and teaches, like Hegel, that the real is the reasonable. It sees in all that exists the necessary result of a long process of development, in which innumerable influences have contributed to render the present world what it is, and not something quite different from it. But it sees in the present world only the *present* world; tomorrow it will be changed. What in to-day is the effect of yesterday, must at the same time be the cause of tomorrow. Thus Darwinism is at once extremely tolerant and the prophet of a different future. If at times this should not appear to be the case, the blame is due, not to the theory, but to its advocates, who often seem not to understand the doctrines they so zealously teach, since they are enraged at an opposition which, if they understood how necessary and inevitable it is, they might with ease gradually but certainly remove."

It was shown that the Development theory is applicable to all forms of existence and to all departments of human life. If the law were carefully applied to history as well as to nature, we might hope to be able to reduce the phenomena of both to one great law of development, by

means of which we should be enabled better to understand both the past and the future, and to judge more clearly of the present.

The important bearing which the work at the Naples and similar stations had on the elucidation of this law was then pointed out. "Every fish, every crab, every Medusa is the result of a long process of development, which we have to trace, and the determination of which the Zoological Station is intended to facilitate. That is its purpose; it was for that end that I built it, and for that reason I have asked you to lend your support to my efforts."

THE "VILLE DE CALAIS" BALLOON ASCENT

PARIS, May 3.

WE made our ascent yesterday from La Villette gas-works at 1.25 P.M., and landed safely in a field at Crenoy, a small country place four miles south-east of Troyes, which is about 100 miles south-east from Paris. After having made observations during a little less than six hours, our grapnel was let down at ten minutes past seven. There were three of us in the car—M. Duruof, Mr. Marriott, an English correspondent in Paris, and myself. The maximum altitude reached was about 12,000 feet. The ascent was very gradual, and the above height was reached only at six o'clock. No sensible effect was perceived, although the temperature of the air, which on the ground was about 50° F., was no more than 26° at this altitude. We tried several experiments, with what success it remains to determine on examination of the apparatus. Some of the results, however, I am able to state here.

We had suspended to the net a number of cages containing small birds and guinea-pigs. The current of gas had a decided inclination to flow in a certain direction, and we had not ascended 6,000 feet when one of the birds was found dead by suffocation. It was the only bird exposed to the inhalation of the current of gas, and no other was injured. It was proved by a careful autopsy executed this morning by Dr. Lionville that this bird had perished by intra-osseous hæmorrhage in the cranium. The hæmorrhage had taken place on both sides, and without any lesion appearing to the exterior.

We discovered that not less than four different banks of clouds were being carried over Paris and its vicinity. Before the end of our journey the clouds had considerably diminished in thickness, and the blue sky appeared. I was able to take some thermo-solar observations with a blackened bulb thermometer *in vacuo*.

As the effect on our constitutions of our 12,000 feet trip was very trifling, I am of opinion that the experiment may be scientifically conducted gradually to an immense altitude, independently of previous catastrophes.

W. DE FONVIELLE

NOTES

As we announced some months ago (Dec. 24, vol. xi. p. 153), Prof. Huxley is to undertake the duties of Prof. Wyville Thomson's chair of Natural History in the University of Edinburgh during the present summer session. Prof. Huxley gave his introductory lecture on Monday afternoon to a large audience. He was accompanied by Principal Sir Alexander Grant, Principal Tulloch, St. Andrews, and the members of the Senatus, and was enthusiastically received. He expressed at the outset a hope that at this time next year Prof. Thomson would be among them again, full of health and vigour, laden with the spoils of the many climes through which he had travelled, and a sort of zoological Ulysses, full of wisdom for their benefit. He then took a general view of his subject, put before the class

the considerations which resulted from the careful study of a single animal, the Crocodile; an animal which was worthy of attentive study, as it might be said that a knowledge of its organisation was the key to the understanding of a vast number of extinct reptiles, and the key to the organisation of birds; while it helped them to connect the higher with the lower forms of vertebrate life, and was, in part at any rate, the key to the history of past life upon the globe. There might be asked respecting this animal, as respecting every other living thing—first, what was its structure? second, what did it do? third, where was it found? and fourth, in virtue of what chain of causation had this thing come into being?—this last having only been recently recognised as one of those questions which might legitimately be put. He then proceeded to describe the organisation of the Crocodile—its morphology, physiology, and distribution; and remarked that there were few animals about the palæontological history of which they knew so much, as they could carry back its history through the tertiary and secondary epochs. The answer to the last question constituted *Ætiology*, or the science of the causes of the phenomena of morphology, physiology, and distribution. Here, as in all cases where they had to deal with causation, they left the region of objective fact and entered that of speculation. With their present imperfect knowledge, the only safe thing they could do in attempting to form even a conception of the cause of this extraordinary complex phenomenon was what a wise historian would do—stick by archaeological facts. He pointed out that palæontological facts showed that there had been a succession of forms of that animal to the present day, the oldest being something like the Lizard.

THE Instructions prepared for the use of the officers of the Arctic Expedition in their Scientific work are now nearly complete, and all the courses of instruction, comprising the use of magnetical, astronomical, and meteorological instruments and of spectroscopes, will be concluded next week, many officers from both ships having taken part in them. We believe that the present arrangement as to date of leaving, the 29th instant, may be considered as final. We have already stated that the exploring ships are to be accompanied as far as Disco Island by the *Valorous* for the purpose of enabling them to fill up with stores and coal at the last moment. At the suggestion of the Council of the Royal Society, advantage will be taken of the presence of this ship to make observations in a little explored region, her homeward voyage being employed in carrying out such a physical and biological exploration of the southern part of Baffin's Bay and the North Atlantic between Cape Farewell and the British Isles as may serve to complete the work which is being so successfully prosecuted in other seas by the *Challenger*. Mr. J. Gwyn Jeffreys, the coadjutor of Dr. Carpenter and Prof. Wyville Thomson in the *Porcupine* expeditions, which first demonstrated the feasibility and scientific importance of this kind of exploration, has volunteered for the service, and he will take with him as his assistant Mr. P. Herbert Carpenter, who did good work when accompanying his father in the *Porcupine*, and who will especially take charge of the physical inquiries.

M. CORNU's lecture on the velocity of Light at the Royal Institution to-morrow evening is looked forward to with great interest. We believe he intends to speak in French, though his knowledge of English renders him quite competent to make use of that language if he chose. An account of the results attained by M. Cornu will be found in *NATURE*, vol. xi. p. 274.

HOFRATH HEINRICH SCHWABE died at Dessau on April 11; he reached a patriarchal age, having been born on Oct. 25, 1789, at Dessau. He retained his faculties to the last, although he had been compelled for many years to relinquish his favourite astronomical studies, which in 1857 had won for him the Royal Astronomical Society's Gold Medal.